

ON SOME REPTILIA OF THE CRETACEOUS FORMATION OF THE UNITED STATES.

POLYDECTES, Cope.

This genus is indicated by one, perhaps more teeth, which resembles in some respects those of the Crocodilian genus *Thecachampsa*. Crown of dense concentric dentinal layers, with small pulp cavity. Enamel with two prominent ridges separating inner from outer aspects, but approximated on the inner face, which thus included, is but one-third the circumference of the tooth. Ridges extending from tip to near base of crown, with a sulcus along the inner side of each. Crown acuminate, a little swollen at the base and above the middle. Section circular.

POLYDECTES BITURGIDUS, Cope.

Crown a slender cone slightly curved near the base. Middle portion constricted, its surface marked with narrow obscure facets. On the inner face, a shallow groove within each of the bounding sulci, the two separated by an indistinct groove. The enamel is smooth and worn, and leaves no traces of other sculpture.

	Lines.
Length of crown.....	30
Diameter at base of do.....	10
"    middle.....	6.
"    above do.....	6.5

From the marl pits of James King, Sampson co., N. Ca. Discovered by Prof. W. C. Kerr, Director of the Geological Survey of North Carolina.

LIODON CONGROPS, Cope.

Spec. nov.

This species is indicated by a posterior cervical vertebra which presents so many characters, as to render its exclusion from the present work scarcely proper. In size it bears some relation to the *Mosasaurus minor*, Gibbes, but is still smaller, and is separated at once by the round instead of depressed articular faces.

The posterior articular face is the round one; the anterior is slightly depressed; and opposite the diapophyses and neural canal slightly flattened, so as to give a slightly trilateral superior outline to the cup. It is not excavated above as in the species of *Clidastes*. The hypapophysis is broken, but its base is unusually long and wide. The infero-anterior limb of the short diapophysis descends to the edge of the cup, considerably below its middle. The space it encloses with its superior ridge which extends into the anterior zygapophysis, is reticulate striate. The whole surface below is minutely striate; the striae become coarse as it approaches the ball. The latter is surrounded by a groove, and its margin projects acutely beyond the adjacent surface of the centrum. The latter is much contracted behind the ball, and the faces below the diapophyses are concave. Bases of neuropophysis striate. Neural arch broken away above. Neural caudal with an epapophysial ridge.

	Lines.
Length centrum with ball.....	20.8
“ “ to ball.....	18
“ “ “ hypapophysis.....	5.8
Width base hypapophysis.....	5.5
Depth ball.....	10.4
Width “.....	11
“ cup.....	12.6
Depth “.....	11.
Length base neuropophysis.....	12.

In profile the ball has a very slight obliquity looking upwards. From the Rotten Limestone of Alabama, discovered by E. R. Showalter, M. D.

#### LIODON VALIDUS, Cope.

*Macrosaurus validus*, Cope., Proc. Boston, 1869. *Nectoportheus validus*, Cope, Proc. A. N. S., Phil., 1868, p. 181; Leidy, Cretac. Rep. 74-75, Tab. VII, 19-20, III 1-2.

This species is represented by two cervical and four dorsal vertebrae of one individual, and a large dorsal of another, in the museum of the Academy; the former associated with numerous fragments—including part of an os quadratum, from L. T. Germain, Burlington co., N. J. Two dorsal vertebrae of a large individual in the museum of Rutgers College, several vertebrae with broken quadrate and other bones and teeth in my private collection, from near Barnesboro, Gloucester co., N. J., and a number of vertebrae in the collection of Prof. Marsh, of Yale College, further establish its character.

The *quadrate bone* is highly peculiar as above pointed out. The posterior descending hook of the proximal extremity is quite short, and is marked by an obtuse ridge which passes forwards and disappears immediately above the pit alongside the meatus. What especially characterizes this species and genus, and allies it to *Clidastes*, is the presence of a strong longitudinal angular ridge, which extends from the usual external angle of the proximal extremity, (which becomes here a process,) separating the outer aspect of the quadratum into two entirely distinct planes: one that of the meatus, the other that of the ala.

Two separate *opisthotic bones* accompany these remains, which were mixed up with those of the *M. depressus*. The vertebrae of the two species were easily separated. The quadrate bone also was identified by one accompanying the vertebrae of *M. validus*, in my own collection. I could not so readily assign the opisthotics to the proper species. I have assigned them here, because their glenoid cavities apply much more readily to the quadrate bone of the *L. validus* than of the *M. depressus*. As compared with the same bones of two *Mosasaurus dekayi*, they present three marked characteristics. First, they are relatively much shorter; second, the distal anterior process which fits within the squamosal is much more prolonged; third, the inferior of the two faces to which the squamosal is applied, is a continuation of the general inferior plane of the bone; in *M.*

mitchillii it is a different plane, like a rabbit. It may be added, that the glenoid cavity is narrower and deeper.

*Four teeth* from Barnesboro, indicate marked characters. They are much compressed as in *L. mitchillii*, and the posterior cutting edge is well developed and forms a narrowed extremity of an elliptic section. The anterior ridge less developed. In three crowns there is no trace of the unequal division by these edges, as in *Mosasaurus* sp. One probably from the premaxilla is more abruptly recurved than the others, with base rather expanded inwards. The distinguishing character of these teeth, which separates it from *L. mitchillii*, is the abundant longitudinal fluting, and striation of the enamel. The grooves are deeper and shallower, coarser at the base; the striae are fine, continuous and rugose. These are not seen in *L. mitchillii*. The general form of the crown is short, broad at the base and well curved posteriorly and inwards.

	Lines.
Elevation of crown and pedestal.....	21
“ “ “ alone.....	16
Antero-posterior diameter do. at base.....	12

The lateral element of the *atlas* is represented from the inner side in Fig. No. 3. The anterior termination of the inferior ala, and the articular face for the centrum, are as in *M. mitchillii*. The inner articular face is divided by a vertical depression; the posterior, or that meeting the odontoid process, is quite prominent and distinct. The anterior facet for the occipital condyle, is transversely divided by a depression.

The form of the *cervical vertebrae* is so much like that of the *Mosasaurus dekayi*, as to be readily taken for those of a small example of that species. The first dorsals, or those without hypapophysis, are more elongate than in the latter, and the body is more contracted, so that the ball presents a projecting rim all round. This is readily knocked off in the rough handling the specimens usually receive. The cup is also proportionately expanded. *Posterior dorsals* where the diapophyses issue half from the centrum, have the latter slightly depressed; where the diapophysis comes three-fourths from the body, the articular faces are a broad transverse ovate, well expanded on the margins, below which the surface is slightly striate. In the longer or anterior dorsals, the rudiment of zygosphen and zyganchrum is well marked.

Unfortunately, no caudal vertebrae of this species have been preserved, —so that I do not know their form. The posterior dorsals are so much more depressed than in *Liodon laevis* that future discovery may justify the generic separation of the genus *Nectoporthenus* which I originally applied to this animal.

For the largest measurements I refer to Dr. Leidy's Essay on Cretaceous Reptiles, where the description of the large specimens of *Macrosaurus laevis* belong to the present species, and have served in part as my types.

The following are the proportions of the smaller individual, from L. T. Germain:

	In.	Lines.
Length of centrum cervical (with ball).....		34
Depth ball of same.....		18.5
Width " ".....		21
Length anterior dorsal.....		34
Width cup.....		24
Proximal width outer face quadratum.....		28
Length quadratum to lower edge pit.....		20
“ opisthotic (see description).....	3	4
“ outer margin do.....	3	4

This was a large and powerful reptile, and probably more elongate in proportion to its bulk than the Mosasaurus, well deserving the name *Macrosaurus*, which Owen has applied to an ally.

From the upper Greensand Bed of the New Jersey Cretaceous.

#### THECACHAMPSA, Cope.

The species of this genus have long simple hypapophyses. In “Synopsis Extinct Batrachia and Reptilia N. A.,” p. 63, the question as to the presence or absence of truncate or split hypapophyses as in *Holops*, etc., was left undecided.

#### TAPHROSPHYS MOLOPS, Cope.

In a specimen of this species which I found in place in the bottom of the green sand bed at Hornerstown, N. J., the lateral intersternal bones were distinctly seen in place. They present a rounded interior outline, and apply to an equal extent of the hyo- and hyposternal bones. They extend but one-third the distance to the median longitudinal suture, and are much as in the existing genus *Podocnemis*. The specimen observed measures 10.5 inches in width between the inguinal notches.

#### TAPHROSAURUS, Cope.

Suborder Streptosauria. Neural arch not coössified with the centrum, each neuropophysis attached in a rounded pit of the body.

This genus is proposed for the *Plesiosaurus lockwoodii*, Cope, Trans. Amer. Phil. Soc., 1869, 40. Were it a true Sauropterygian, I would continue to regard it as a *Plesiosaurus*, but it is, I have little doubt, one of the same type as *Cimoliasaurus*, which it resembles, except in the peculiar attachment of the neural arch. From the cretaceous clays of New Jersey, the No. 1 of Meek and Hayden.

*Stated Meeting, January 7th, 1870.*

Present, fifteen members.

MR. FRALEY, Vice-President, in the Chair.

Prof. Marsh, of Yale College, was introduced and took his seat.

A letter of envoy was received from the Central Physical